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CONTENTS.

Beets
Carrots
Horseradish
Parasip
Radish
Salsify
Turnips

BEETS.—(*Beta Vulgaris*.)

Beets are one of the most profitable crops grown in intensive gardening. The first thinnings may be used for greens, the later thinnings for bunch beets, leaving a full crop to be harvested. They are of easy culture and should be found in every home garden.

While the beet may be grown on a variety of soils it does best on a deep, rich, sandy loam. The land should be plowed deeply and manured with rotted stable manure the fall before. Just before freezing up of winter it may be thrown up lightly or plowed shallow again, to mix the manure with the soil and prevent it from washing. As soon as it is fit in the spring it should be plowed again, if necessary, and worked up with the harrow until it is fine and mellow. The loosening of the soil should be effected to a depth of 10 or 12 inches, if possible, as this makes a great difference in the quality of the crop. While the land is being fitted in the spring just before the last harrowing, is a good time to apply commercial fertilizers.

One thousand to fifteen hundred pounds of a complete fertilizer may now be applied per acre to be followed by dressings of nitrate of soda later.

For the early crop the turnip rooted and oval varieties should be sown as soon as the ground can be made ready in the spring. In about two months they will be ready for use. For the main crop, the long and half-long varieties may be sown about the same time or a little later. They require four or five months in which to mature. Most growers now prefer to use only the early varieties, making successional sowings to get the early, medium and late crops. They are generally of better quality than the long-rooted, late varieties, as they take less time to mature and are not usually checked in their growth by the dry weather or mid summer. The seed should be sown in rows from 12 to 18 inches apart according to the variety

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and method of cultivation, and the plants thinned finally to from 4 to 6 inches in the row according to the size of roots wanted.

The so-called beet seeds are really fruits, each one containing two or more seeds. On account of the rough, uneven husk which covers the seeds, or fruits, it is important to make the soil firm over the row after sowing, so as to being the moist earth into contact with the covering of the seeds, and thus bring about an early and even germination. Otherwise the moisture may be a long time in penetrating the coats and the germination in consequence slow and uneven. Some soak the seed in water for a few hours before sowing to overcome this difficulty, but this method is better suited to small sowings by hand, as the moistened seed does not readily pass through the seed sower.

The crop should receive cultivation once a week throughout the growing season, or at least frequently enough to maintain the surface mulch and prevent the growth of weeds. After the plants have come up an application of from 50 to 100 pounds of nitrate of soda per acre may be given after the first hoeing, to be followed by two or three more such applications at intervals of a week or ten days.

At the first thinning the plants may be left about two inches apart, those removed being used for greens. If there are any vacancies at this stage some of the best plants may be transplanted in these places on a rainy or dull day. Later when the bunch beets are removed the plants may be left from four to six inches apart. The young beets taken out now will be very tender, especially if they have made rapid growth. They are tied in bunches of five or six and washed clean when they are ready for the market. When the later crop matures and is harvested the tops are removed either by twisting or better by cutting, leaving an inch of leaf stalk. They are either sold at once or stored in sand in a cool cellar. Three or four hundred bushels is a fair yield per acre. One ounce of seed sows 75 to 100 feet of row and five to eight pounds sow one acre.

Good varieties are Crimson Globe, Egyptian, Crosby's Early Egyptian, Edmonds', Blood Turnip, Boston half-long Blood, Boston Blood Turnip and Long Dark Red. Early Blood Turnip has a rich color and even shape and is a good variety for all round purposes.

P. J. S.

CARROTS.—(*Daucus Carota*.)

By H. H. McNutt.

Something might be said on the growing of carrots for home use and the market. First, to get a good crop of carrots, or of any kind of vegetable, you must have a rich, well pulverized soil. A sandy loam well supplied with humus and plant food is what the carrot likes best. Such a soil is not apt to bake over the seeds and allows the young plantlets to come through the ground readily.

Second, be sure to have reliable seeds. In my experience, I have always found it best to test all my seeds before planting. A person will then know whether his seeds are going to germinate well or not. For early market carrots, I have always had good success in planting Chantenay. This is a good flavored half-long variety, well suited for table use. If left until October it will yield a large crop. For the late varieties, Danvers half-long is a good all round carrot and a fairly good keeper. I have never had a failure in these varieties.

For an early crop the seed should be sown as soon as the ground can be worked in the spring. Twelve to fifteen inches is far enough apart for the rows of early carrots, especially if they are to be cultivated by hand or by wheel hoe. For late varieties, and especially where the work is to be done with a horse the rows may be two to two and one half feet apart. Sow the seed about one half inch to an inch in depth and make the earth firm over the row. Some persons sow radish seed along with the carrots to mark the row. Tillage may then be started before the carrots are up. The radish plants break the crust and make it easier for the carrots to come through. Later they should be thinned to about four or five inches apart in the row.

Before planting, when the drills are made up, it is a very good plan to sow a small amount of a good fertilizer along the top of the row and then run the seeder right down over it. The seed will not come in contact with the fertilizer, which is washed down by the first rain, the young plants getting the benefit of it as soon as they come up. In general farming it is usual to follow a system of rotation of crops going from one field to another with the different crops. While such a practice results in better crops in general farming, I have had good success with carrots by growing them for twelve years in succession on the same piece of ground. I have always had bumper crops, and have nearly always had them on the market first.

Carrots sown early in May are large enough for use by the middle of July, and sometimes earlier.

Only well rotted manure should be used and on land in good condition 15 to 20 tons per acre should be applied. This should be applied the fall before after the ground has been plowed deeply. The ground should then be plowed shallow and left thrown up roughly through the winter to hold the manure.

After the first rough harrowing in preparing the ground for the crop, apply about 1000 to 1500 pounds of complete high grade fertilizer or 100 pounds nitrate of soda, 400 pounds acid phosphate and 100 pounds of muriate of potash.

One ounce of seed, if it is fresh, is sufficient for 300 feet of drill, or two pounds per acre.

A good crop is 300 bushels per acre.

HORSE-RADISH.—(*Cochlearia armoracia*.)

Horse-radish is of easy culture, so much so that it is apt to become a weed. It is propagated by root cuttings. These are taken from last season's growth and are about the diameter of a lead pencil or a little larger. They are cut about six inches in length. They should be planted in the spring in deep, rich garden soil with the top of the cutting about three inches below the surface of the ground. The rows may be 18 to 24 inches apart, and the plants about one foot apart in the row. Horse-radish is sometimes planted between the rows of early vegetables, such as cabbage or beets, and given the whole ground after these are removed. The roots are grated, served with vinegar and used as a relish with meats.

P. J. S.

PARSNIP—(*Pastinaca sativa*).

By John Webb.

The parsnip is a long season crop. It does well in a deep rich sandy loam.

The land should be deeply plowed in the autumn to loosen the soil and allow the long roots to go down. Select if possible a clover sod, adding a moderate dressing of

barnyard manure. Manure should not be applied in the spring as this causes the roots to grow unshapely. The clover sod and manure will supply all the nitrogen needed by the parsnip.

As soon as the ground can be handled in the spring, plow it shallow and harrow until there is a fine surface. Roll the soil to make it firm. Sow the seeds in level or slightly raised drills, the drills being eighteen to twenty-four inches apart. Parsnips should be sown as early in the spring as the ground can be prepared, in some places the last of April or first part of May. The seed is slow to germinate and retains its vitality only a year or two. It should be covered about one half inch deep. As the young seedlings are delicate, the soil should be one which does not readily bake. If it should tend to form a crust over the seeds before they come up, a garden rake may be run lightly over the rows to loosen the surface soil.

The fertilizers suitable for the parsnip crop are 400 pounds of Acid phosphate and one to two hundred pounds of muriate of potash per acre. Use little nitrate of soda, not over one hundred pounds per acre. If the crop is grown on clover sod, no nitrate will be needed. Too much nitrogen causes excessive growth of the top at the expense of roots. The fertilizer should be applied before the last harrowing so that it will be well mixed with the soil.

As soon as the plants are large enough to be seen in the rows they should be carefully cultivated to break the crust, conserve the moisture and keep down the weeds. The thinning should be done before the plants become drawn and weak, when there are two or three rough leaves. If the wireworm or cutworm is taking them, do not thin too much at first. About five or six inches apart is the proper distance to leave the plants in the rows.

Parsnips for winter use should be lifted in the autumn and stored in sand in a cool place. They keep well in the ground all winter where they grew. Some people think that they are improved in quality by exposure to frost and so a parsnip crop is usually left in the ground all winter and dug in the spring.

One ounce of seed sows about 200 feet of drill, or four to six pounds to the acre. Good varieties for table use are Abbott's Hollow Crowned and Student.

RADISH—(*Raphanus sativus*).*By J. R. Dickson.*

Radish is a vegetable the roots of which are eaten uncooked. It has a short season of growth, maturing in the open in from four to six weeks, and prefers a cool situation. It is generally treated in the garden as a companion crop. It is also forced under glass during the period from fall to spring.

Outdoor Crop.

The seed of the spring varieties is sown thinly in the garden where the crop is to mature, in drills 12 inches apart, or between the rows to be subsequently occupied by some later maturing crop, at a depth of about half an inch. Make the first sowing in the spring as soon as the ground is in good shape and keep up a succession every two or three weeks thereafter. Discontinue during summer, but sowings may be resumed in August for the fall crops. Still sow the spring varieties. Thin out to two or four inches in the drills, according as the turnip or the long rooted varieties are used. Pull for the market immediately when they mature, as they soon become pithy, bitter and stringy.

The soil that best suits this crop is a light, warm, well manured, sandy loam, with plenty of readily available fertility. Quick and continuous growth is essential for obtaining best results. For the later crops use cooler ground.

Forcing Crop.

Radishes may be forced in heated greenhouses—in solid beds or raised benches—from October to April and also in hotbeds in late fall and early spring.

The soil or compost for forcing is made up of the following:—three parts of well rotted turf from a light sandy loam and one part of well rotted manure, thoroughly mixed up together. This compost is placed in the beds or benches or on the hotbed manure to a depth of four to six inches—the former for the turnip rooted sorts and the latter for the long rooted. In the benches inverted sods or ashes should be first put in to give the necessary drainage. Pack the soil moderately firm. Sow the seed in drills four to six inches apart according to variety, at a depth of one quarter to one half an inch, dropping two or three seeds every half inch or so in the drills. The soil should be

moist, and should be watered if necessary before sowing. Ten to fourteen days after sowing, when the seed leaves are well formed, thin out to two inches apart. Cultivate occasionally and keep the soil free from weeds. Water as freely and as often as is needful, but carefully. The atmosphere should be moist, and the temperature by day should run from 65 to 70 degrees, and at night from 45 to 50 degrees. The radishes must have plenty of light, but not much bottom heat is required—otherwise they are liable to run to top. The ideal place for the crop is a hotbed which is nearly spent,—e. g. one which has just grown a crop of lettuce. This gives all the bottom heat required. If the bench soil is six inches deep, it will last the whole forcing season. If four inches, work in a small quantity of manure after each crop is removed.

Use only large seed and so give the radishes every chance to mature at the same time.

Good varieties:—outdoor, Icicle, with long white roots; Ne Plus Ultra, turnip rooted scarlet, good for forcing; Beckert's Chartier, rose color and white, long rooted.

One ounce of seed sows 100 feet of drill, or 10 lbs. to the acre.

SALSIFY (*Tragopogon pinnatifolius*) OR VEGETABLE OYSTER.

Its Cultivation and Use.

By James Allan.

Salsify is a native of Europe. It is a biennial, having a fleshy tap root, about eight to twelve inches in length, with a diameter of an inch or more. In appearance it resembles the parsnip, being somewhat smaller.

The seed is rather light in weight, long and pointed at each end and stick-like in appearance. It retains its germinating power for two years and sometimes longer. The ground should be prepared the fall before, loosening the soil with the plow to a depth of eight inches or more. Fresh manure should not be used the same season as the crop is grown. It causes the roots to grow rough and forked. The seed should be sown as early in the spring as the ground can be worked, as this is a long season crop. The drills should be from twelve to fourteen inches apart and the plants thinned to about four inches in the row. The cultivator and hoe should be frequently used to prevent the growth of weeds and to make and retain a soil

mulch for holding the moisture. This crop requires an abundance of moisture, but should not be grown on land that is water-logged and sour.

The roots reach full size in October. Part of the crop may be harvested then for fall and winter use, the rest remaining in the ground all winter the same as parsnips. The winter supply should be stored in a cool cellar and be covered with sand.

Salsify is not as generally grown as it should be. It is not a difficult crop to raise and has a delicate and delicious flavor. When properly cooked the flavor somewhat resembles that of oysters from which it gets the name of vegetable oyster.

One ounce of seed is required for seventy feet of drill, or about eight to ten pounds to the acre.

TURNIPS.

By H. S. Cunningham.

Of all our garden vegetables, turnips are perhaps the most easily grown. They can be grown successfully in almost any kind of soil, although a deep sandy loam is preferable. The land should be plowed quite deeply the previous fall, but if conditions are such as to permit having it plowed early it would be better to plow shallow the first time. After plowing, harrow with a spike tooth harrow at short intervals plowing again deeply as late as possible before the frost stops operations. The extra working in the fall would start the growth of weeds and destroy a large number which would otherwise be a source of trouble throughout the growing season.

In the spring a medium dressing of well rotted barnyard manure, say 15 tons per acre, should be applied. Harrow well, preferably with a disk, and plow again. Harrow well with a spike tooth after the second plowing and the land is ready to drill.

Commercial fertilizers should be applied at the time of seeding, sown either broadcast or in drills, the latter method being better. One hundred pounds of nitrate of soda, 100 of muriate of potash and 500 to 600 of acid phosphate per acre is a very good mixture for this crop.

In sowing the fertilizer in drills a shallow furrow is first made with the plow and the fertilizer is sown in this. A ridge is made by covering in the fertilizer and the drill is made in this ridge.

In garden operations the drills should be about 18 inches apart but in field operations they may be 28 inches.

After the ridges are formed they should be lightly raked off on top when a shallow drill may be made to receive the seed. After the seed is sown, it can be covered lightly, by using the back of the rake.

As soon as the plants have their third leaf well developed, they should be thinned, leaving single plants from 12 to 14 inches apart in the rows. Cultivation should start as soon as the plants are well through the ground and be continued two or three times a week all through the growing season or until the plants are too large to allow the cultivator to pass between the drills. Constant cultivation will conserve the moisture, destroy the weeds, keep the plants growing and ensure a crop of roots of good quality, free from woodiness.

By sowing some of the earlier varieties first, which would be ready for use in from four to six weeks after sowing, and sowing Ruta Bagas (or Swedish Turnips) after the first crop is harvested it would be possible to get two crops in the same season. Ruta Bagas will give good results when sown as late as the first week in July.

One ounce of seed sows 200 to 300 feet of drill, or one pound to the acre.